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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/989,179	11/21/2001	Michiharu Aratani	2975.0008	9420

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EXAMINER	
LAM, HUNG H	

ART UNIT	PAPER NUMBER
2615	

DATE MAILED: 07/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/989,179	ARATANI ET AL.	
	Examiner	Art Unit	
	Hung H. Lam	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03/14/05*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-10,13,15 and 16* is/are pending in the application.

4a) Of the above claim(s) [redacted] is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-10,13,15 and 16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 November 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *03/14/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendments, filed on 03/14/2005, have been entered and made of record. Claims 3, 11, 12 and 14 are canceled and Claim 16 is added. Claims 1, 2, 4-10, 13, 15 and 16 are pending.

In view of the Applicant's cancellation of claim 3, objections to the drawings are hereby withdrawn.

Response to Arguments

Applicant's arguments with respect to claims 1, 2, 4-10, 13, 15 and 16 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1, 2, 4-10, 13, 15 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Levecq (US-6,392,755).

With regarding to **claim 1**, Levecq discloses a compound eye imaging system comprising:

at least three optical blocks (Col. 4, Ln. 14-35), and

an imaging element for picking up object images formed by the optical blocks in imaging ranges provided for each optical block (Col. 3, Ln. 55-67),

wherein optical axes of the optical blocks intersect each other (Fig. 2; one of the optical axes 9 and 10 of the optical system 10 is intersected each other at object 4), and

the compound eye image system measures the distance to an object based on outputs from a pair of image ranges in the imaging element, which correspond to any one pair of the at least three optical blocks (Col. 2, Ln. 14-30; Col. 5, Ln. 49-67; Col. 6, Ln. 1-26; the accuracy of the calculating distance from the light source to the device depends on the number of used spot).

With regarding to **claim 2**, Levecq discloses a compound eye imaging system wherein all the optical axes of the optical blocks roughly intersect each other at one point (Fig. 2; optical axes 9, 10 and other are intersected at object 4).

With regarding to **claim 4**, Levecq discloses a compound eye imaging system wherein a plurality of imaging blocks, which comprise the imaging ranges that are different from each other, are formed in the imaging element (Col. 3, Ln. 47-67; Levecq teaches that a 28 mm CCD array comprises a plurality of imaging blocks wherein each imaging block corresponds to about 20 elementary detectors on the detector 7; it is inherent that each of the imaging block/ 20 elementary detectors is distanced from one another and captured different part of the object that are formed on the detector 7).

With regarding to **claim 5**, Levecq discloses a compound eye imaging system wherein the imaging element is constructed so that the plurality of imaging blocks are formed on a single substrate (Col. 3, Ln. 36-46; Col. 3, Ln. 57-64; see the structure of the detector 4 or CCD array on Fig. 2).

With regarding to **claim 6**, Levecq discloses a compound eye imaging system wherein the imaging element is constructed by forming the plurality of imaging blocks on a single semiconductor substrate (Col. 3, Ln. 57-64; see the structure of the detector 4 or CCD array on Fig. 2; the imaging blocks with the total of 2048 elementary detectors {20 elementary detector for each block} must be formed on a single semiconductor substrate which is commonly use in the art).

With regarding to **claim 7**, Levecq discloses a compound eye imaging system wherein the optical blocks are unified (Col. 4, Ln. 15-27; it is noticed that the plural of optical blocks are unified to form the micro-lenses).

With regarding to **claim 8**, Levecq discloses a compound eye imaging system further comprising optical action surfaces comprising the optical blocks wherein at least one of the optical action surfaces has an aspherical shape (Col. 4, Ln. 28-30; aspherical micro-lenses must be formed on the basis of aspherical shape).

With regarding to **claim 9**, Levecq discloses discloses a compound eye imaging system wherein an optical action surface comprising at least one of the optical blocks has a rotational asymmetric aspherical shape (Fig. 2; Col. 4, Ln. 28-30; the central optical block corresponding to optical axes 9 is interpreted as the optical block having a rotational asymmetric spherical shape).

With regarding to **claim 10**, Levecq discloses a compound eye imaging system wherein at least one of the optical action surfaces comprising the optical blocks is a diffraction action surface (Col. 5, Ln. 64-67 – Col. 4, Ln. 1; it is inherent that the micro-lenses include a diffraction action surface because the 10 mm focal length is chosen so that the profile of the light spots remains within the diffraction limit of about 50μm).

With regarding to **claim 13**, Levecq discloses an imaging device wherein an average value of distances to an object is measured based on outputs from multiple pairs of imaging ranges for picking-up an image of the object through multiple pairs of optical blocks in the imaging element (in Col. 2, Ln. 20-30, Levecq teaches that the more spots are used for calculating the distance to the object the higher the accuracy is; in Col. 5, Ln. 49-67, Levecq teaches that the value of distance to an object is calculated based on the average separation between two successive spots; in Col. 3, Ln. 43-45, Levecq teaches that each spot being spread over at least two elementary detector {a pair of imaging range}. Therefore, the value of the distance to an object is based on the average calculation of two or more successive spot {each spot covers over 2 elementary detector}).

With regarding to **claim 15**, Levecq discloses electronic equipment comprising the compound eye imaging system (Fig. 3; optical system 10, CCD array 7; Col. 3, Ln. 47-67 – Col. 4, Ln. 1-40).

With regarding to **claim 16**, Levecq discloses a compound eye imaging system, comprising:

a plurality of optical blocks (Col. 4, Ln. 14-35), and

an imaging element for picking-up object images formed by the optical blocks in imaging ranges provided for each optical block (Col. 3, Ln. 55-67),

wherein optical axes of the optical blocks intersect each other on the object side (Fig. 2; one of the optical axes 9 and 10 of the optical system 10 is intersected each other at object 4), and

each imaging range corresponding to each optical block in the imaging element is formed on a single semiconductor substrate (Col. 3, Ln. 57-64; see the structure of the detector 4 or CCD array on Fig. 2; the imaging blocks with the total of 2048 elementary detectors {20 elementary detector for each block} must be formed on a single semiconductor substrate which is commonly use in the art).

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Yoshida (US-2001/0,010,554) discloses a CCD array which is formed on a semiconductor substrate.

b) Hokari (US-5493,143) discloses a solid color image forming on a semiconductor substrate.

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung H. Lam whose telephone number is 571-272-7367. The examiner can normally be reached on Monday - Friday 8AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's primary, NGOC YEN VU can be reached on 571-272-7320. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HL

06/17/05

NGOC-YEN VU
PRIMARY EXAMINER